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AMSAT NEWS SERVICE
ANS-056

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

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SB SAT @ AMSAT $ANS-056.01
ANS-056 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 056.01
From AMSAT HQ KENSINGTON, MD.
DATE February 25, 2018
To All RADIO AMATEURS
BID: $ANS-056.01

AO-92 Operating Schedule Posted for Week of 25 Feb to 3 Mar 2018

Drew, KO4MA, AMSAT VP Operations updated the AO-92 Operating Schedule page for the coming week:
https://www.amsat.org/satellite-schedules/

AO-92 operations are scheduled among the U/v FM repeater, L-Band Downshifter, Virginia Tech Camera, and the University of Iowa's High Energy Radiation CubeSat Instrument (HERCI). Please keep the uplink clear during passes with scheduled mode changes.

For the week of 25 Feb to 3 Mar 2018, the following mode changes are scheduled:

+ Approximately 1420UTC 25Feb we will enable the L band uplink for ~24 hours

+ Approximately 1515UTC 27Feb we will enable high speed data in order to download from the HERCI experiment for 40 minutes

+ Approximately 1545UTC 2Mar we will enable high speed data in order to download from the VT camera for 40 minutes in support of a demonstration at a Virginia high school

+ All other times the U/v repeater will be open continuously.

[ANS thanks Drew, KO4MA, AMSAT VP Operations for the above information]

PicSat Status - Commissioning Continues, FM Transponder Test Success

PicSat was successfully launched on 12 January 2018 on the PSLV-C40 mission. It is orbiting Earth at 505km altitude on a Sun synchronous orbit. PicSat, a 3U CubeSat, was developed in a record time of 3 years by a small team of astrophysicists lead by Sylvestre Lacour (CNRS) at the LESIA laboratory / Paris Observatory / PSL in France.

The main goal is to observe the southern hemisphere star Beta Pictoris continuously in order to capture any transit phenomena related to its planet that has been predicted to pass in front of the star by the summer of 2018. The commissioning phase is making good progress and the PicSat team is learning how to operate the satellite. The main next step is to fully take control of the attitude and point in the desired direction.

Thanks to the involvement and efforts of Sylvain Azarian (F4GKR) and the IARU, PicSat uses amateur bands to communicate:

Uplink: 145.910 MHz FM (when transponder is enabled)
Downlink: 435.525 MHz FM voice, see web for data format

When not in science mode, PicSat has a transponder that will be made available for the amateur community: the timings will be announced. A first transponder surprise test was done on 15 February from the Paris Observatory ground station in Meudon, France: https://www.youtube.com/watch?v=qQd0WEcoFgE&t=18s)

It was received by amateurs in Europe https://twitter.com/supertrack_it/status/964267817095835648

During past weekend (17-18 February) the PicSat team had programmed downloads of House Keeping data from the payload over targeted areas across the planet. Many amateurs received and send the data to the PicSat data base. This has allowed for the first time to create a 24h monitoring of the temperature sensor readings, which are helpful diagnostics for the team showing the importance of this community effort: https://twitter.com/IamPicSat/status/965982775718436864

Radio amateurs can register on the PicSat website to become involved
and upload their data to the PicSat data base, where it will be visible
for anyone to see and serve the PicSat team. This will be even more
important once observations of Beta Pictoris will start and a large
stream of photometric data will be produced to monitor the brightness
of the star and create the real time light curve.

The PicSat team is most grateful for all the positive collaboration,
feedback and help to date and looks forward to continue and strengthen
this connection.

Please see https://picsat.obspm.fr/ for all details.

[ANS thanks Maaten Roos and the PicSat Team at the Paris Observatory
for the above information]

Falconsat-3 Software Reload

AMSAT Vice-President Operations, Drew Glasbrenner, KO4MA reported
that Falconsat-3 has had a software crash after ~850 days uptime.
The Operations Team will need to reload the softeare.

Drew mentioned, "Even though you might hear telemetry, the BBS and
digipeater will be off until we are complete. Please attempt no
transmissions until AMSAT's Operations Team releases Falconsat-3
back to general use. Your cooperation is appreciated.

[ANS thanks AMSAT Vice-President Operations, Drew Glasbrenner, KO4MA
for the above information]

Updates to AMSAT-NA TLE Distribution for 2-22-2018

Nico Janssen, PA0DLO, noted that 18th Space Control Squadron has
swapped the satellite names associated with object 41845 (was CAS-2T)
and another object 41847. Therefore CAS-2T is now object 41847. Nico's
detailed doppler measurements confirm that CAS-2T is in fact object
41847. (Note: the payloads CAS-2T and KS-1Q still remain attached to
the CZ 11 fourth stage.) Thanks Nico, good catch!

The PICSAT team and Albert Van Duersen indicate that a better set of
TLEs for PICSAT is now object 43132. Nico Janssen has also noted that
the best TLE set for PICSAT has been unstable since November 14th of
last year. Nico says that now object 43132 and even object 43133
are better matches for PICSAT than object 43131. Therefore, we will
use object 43132 for PICSAT for now. The problem is the closeness
of objects 43131, 43132 and 43133. Nico says he will continue to
monitor these objects as they slowly separate over time. More later.

[ANS thanks AMSAT Orbital Elements Manager, Ray Hoad, WA5QGD
for the above information]

Why is there so much TLE confusion when new Cubesats are launched?

AMSAT Orbital Elements Manager, Ray Hoad, WA5QGD provided some
answers to frequently asked questions regarding every time a CubeSat
gets launched, there is some confusion on what TLEs should be used.

This is the result of the process of launching a new amateur CubeSat

with other CubeSats, often several dozen at a time. We then start the process of determining which object in a "flock" of CubeSats is associated with a particular spacecraft.

Pre-launch TLEs, that is calculation based on the expected orbit, are usually supplied by the launch provider. Pre-launch TLEs are used until post-launch TLEs (for the group of objects that your satellite is in) are released from the US Department of Defense Joint Space Operations Center (JSpOC) based on observations made with cameras and radars.

There is a a 5 to 10 day period of tracking a group of CubeSats until they separate enough to isolate the one of interest. By observing the Doppler shift on transmissions from a particular satellite against the calculated Doppler shift from all candi-date object TLEs, we can positively associate an object with a particular satellite. In the case of AMSAT satellites, we then advise JSpOC which object number is "ours".

Finally, an individual satellite and its associated TLEs are determined and we settle down to an single, accurate, reliable set of TLEs … and all the other "best guesses" go away, although they may be still floating around on the Internet. But, there are so many variables – did you launch on time, did you get released on time, has the group your CubeSat is in separated enough to identify your satellite, etc. that the process that can be both confusing and annoying at the same time.

AMSAT strives to minimize confusion when distributing TLEs. Dummy object numbers are used for pre-launch TLEs since final object numbers cannot be assigned yet. Immediately post launch we may post candidate objects with generic names like "OBJECT C". Finally, when positive association between an object number and a spacecraft is made, we will use the common name of the satellite. We always recommend using TLEs from the Keps mail-ing list or the current bulletin or bare elements from the AMSAT web site.

Join the AMSAT Keps Mailing list:
https://www.amsat.org/mailman/listinfo/keps

AMSAT Current Keps bulletin:
https://www.amsat.org/tle/current/nasa.all

AMSAT current bare elements:
https://www.amsat.org/tle/current/nasabare.txt

[ANS thanks AMSAT Orbital Elements Manager, Ray Hoad, WA5QGD
for the above information]

JAMSAT Symposium 2018 at Miraikan in Tokyo March 10 - 11

JAMSAT President Mikio Mouri, JA3GEP announced that the JAMSAT Annual General Meeting and Symposium will be held in Tokyo March 10- 11. (Note: all times are noted in Japan Standard Time JST)

Annual General Meeting: March 10 (Sat) 11:00~12:30
Symposium 2018 Day 1: March 10 (Sat) 13:25~18:00
Day 2: March 11 (Sun) 9:30~13:00
Dinner: March 10 (Sat) 18:00

Miraikan - The National Museum of Emerging Science and Innovation

2-3-6 Aomi, Koto-ku, Tokyo, Japan / Tel: +81-3-3570-9151 (main)

http://www.miraikan.jst.go.jp/en/aboutus/

Contact JA3GEP - ja3gep at jamsat dot or dot jp to register

Check JAMSAT's web page for the latest information:
https://www.jamsat.or.jp/?p=659

March 10 Saturday
Time (JST)
13:25 - 13:30 Greetings Mikio Mouri, JA3GEP
13:30 - 14:10 Receiving Satellite Signals in Amateur Radio Bands Naomi
Kurahara, JE6EXN
14:10 - 15:10 NEXUS Progress(1) Kiyoshi Yamaguchi Nihon University
MEXUS Progress(2) Hozumi Ueda, JA0FKM
15:10 - 15:20 Coffee Break
15:20 - 16:00 Receiving Signal from OMOTENSHI Moon Probe Wataru Torii
JAXA Radio Amateur Club
16:00 ~ 16:40 Introduction to Ryman Sat Project Takafumi Shimamura
JI1SYC
16:40 - 17:10 Es'hail-2 (P4-A) and other news from AMSAT-DL (Skype)
Peter Guelzow, DB2OS
17:10 - 18:00 Group Photo
18:00 - 20:00 Dinner at the Canteen Restaurant

March 11 Sunday
09:30 - 10:20 AMSAT-NA's FOX-1 and GOLF Program (Skype)
Paul Stoetzer, N8HM
10:20 - 10:30 Coffee Break
10:30 - 11:10 ISS HamTV receiving Project at Wakaytama University
Katsumi Morita, JA3RVS
11:10 - 11:50 New Generation SDR Satellite ground station with
5,000JPY Noritsuna Imamura, JI1SZP
11:50 - 12:00 Coffee Break
12:00 - 12:40 Enjoy Satellite Communication with Dipole Antennna!
Eiji Nakamura, JA1CPA
12:40 - Other Topics

[ANS thanks JAMSAT President Mikio Mouri, JA3GEP for the above information]

AA5UK Announces March 1 Cayman Island Satellite Activation

ZF2, CAYMAN ISLAND (Satellites, Grids, HF). Adrian, AA5UK, will once again be operating as ZF2AE from Grand Cayman (between March 1-4th) and ZF2AE/ZF8 from Little Cayman (between March 5-10).

Activity will be holiday style (usually) on 40-10 meters using a IC-7300 and vertical antenna.

Operations will be focused on the Digital modes (FT8, RTTY, PSK and other digital modes upon request)with possibly some SSB, and the satellites using 2x FT-817s and Arrow Antenna for satellite. Most of his activity will be in the afternoons and evenings. For the latest operational updates, watch his Twitter links <@AA5UK and @ZF2AE>. QSL direct to AA5UK with a SAE/SASE, LoTW or eQSL.

[ANS thanks Ohio/Penn DX Bulletin #1351 for the above information]

CabreuvaDX Team Announces ZV1C Activation on Satellite March 17-18

Members of the CabreuvaDX Team will be active as ZV1C from Cedro Island between March 17-18th. Activity will be on 80/ 40/20/15/10 meters using CW, SSB and FT8. There will also be activity on 2 meters satellite. QSL via PU2VCP. For more details, see ZV1C on QRZ.com.

[ANS thanks the Ohio/Penn DX Bulletin #1349 for the above information]

ESTCube-2 Applies for IARU Frequency Coordination

The IARU Coordination Requests page shows that the Institute of Physics at the University of Tartu in Estonia is planning a 3U cubesat named ESTCube-2 is a 3U Cubesat.

The primary transceiver proposes to use the 70 cm amateur radio band for uplink and downlink purposes:

+ Beacon reporting satellite status once per minute in AX.25 data packet format with 9600 baud data-rate FSK/GFSK modulated signal with experimental changing frequency up-to 38600 baud using 2GFSK (or 4GFSK for testing) modulation schemes.

+ Digital file and/or analog NBFM signal including low resolution image thumbnail images will be transmitted.

+ The digipeater mode will be used to allow amateur radio operates to use the satellite for two-way digital communication. 9600 bps GFSK AX.25 data uplink will be in 2m amateur band and transmission of digipeated packet in 70 cm radio amateur band.

+ A Doppler ranging experiment will be used to determine satellite distance to Earth in order to improve accuracy of satellite orbit determination. 2m amateur band as uplink and 70 cm amateur band as downlink is used for Doppler ranging method.

+ High-speed communications system data downlink in the 5 GHz amateur radio band, where possible data will be satellite status packets, experiment data and full resolution images from Earth observation camera. Data will be downlinked starting with BPSK modulated 9600 bps data-rate up-to 32APSK modulated 25 Mbps data-rate signal.

+ An on-board corner reflector is planned for possible optical ranging.

More info here
https://drive.google.com/file/d/0B-TI7NbeuNSuUjcwSUhBTEg5UGc/view

No launch opportunity has been identified but planning a 2019 deployment into a SSO.

[ANS thanks the the Institute of Physics at the University of Tartu and the IARU for the above information]

Shanghai Tech University Proposing Amateur Radio Digipeater Microsat

The Amateur Radio Interest Group of Shanghai Tech University has submitted a frequency coordination request to the IARU for a microsat 50k kg, 25 x 25 50 cms with deployable solar panels including an amateur radio mission.

+ An amateur radio digipeater payload available for all radio amateurs.
  Digipeater uplink on 2m amateur band and down link on 70cm amateur
  band using 4k8 FSK.

+ TT&C uplink on 2m amateur band and down link on 70cm amateur band
  for amateur payload using 4k8 FSK.

+ A non-amateur experimental mission will use a laser link and S-band
  data links in the Spacecraft Operation Service.

Planning a launch from Jiuquan Space Center on June 30, 2018 into a
700km SSO.

[ANS thanks the Amateur Radio Interest Group of Shanghai Tech University
  and the IARU for the above information]

Canadian University Design Challenge for “Selfie-Sat”

On February 19, 2018 the Canadian Satellite Design Challenge announced
a competition for a 3U Cubesat “Selfie-Sat” to be designed and built
by Canadian university students.

A snapshot of the Selfie-Sat mission:

1) amateur radio stations contact the university-built cubesat and
    send a command for it to take a photo from space. The photo is
    then down-linked to the station, along with photos and stories
    from Canada.

2) The Selfie-Sat mission will be designed so that amateur radio
    operators will be able to contact it as it passes overhead.
    During the contact, the radio operator will be able to send a
    command for the satellite to take a “Space-Selfie” photo over
    the region.

3) The photo will be immediately transmitted to the ground, along
    with Canadian stories for students of all ages, as well as other
    scenic photos and descriptions of Canada.

“We envision radio amateur operators setting up their equipment at
science centres or even schools,” said Larry Reeves, Canadian Satel-
lite Design Challenge Management Society President, “and having a
public or school event for the pass. We believe this mission will
have outstanding educational benefits for students, and for promoting
Canadian science, technology, and culture.”

Competition details are posted at: http://www.csdcms.ca/

[ANS thanks the Canadian Satellite Design Challenge Management Society
  for the above information]

15th Annual CubeSat Developers Workshop at Cal Poly April 30

The CubeSat Developers Workshop at Cal Poly in San Luis Obispo
will be held April 30 to May 2, 2018.

Registration is now open and can be completed at:
http://www.cubesat.org/workshop-information
A schedule of presentations can also be found on this link.

Early Bird Registration Ends on March 30, 2018 and regular registration begins. Online Registration closes April 27, 2018. Those who wish to purchase passes after this date must buy them at the door.

[ANS thanks the CubeSat Developers Workshop for the above information]

First Citizen Science Workshop Measuring Effects of the Solar Eclipse

This past August, the United States was witness to one of the most beautiful and significant astronomical events in human history – a total solar eclipse that travelled across the country from Oregon to South Carolina.

In addition to its visual beauty, this eclipse also had profound effects on the ionosphere, an electrically charged portion of the upper atmosphere that affects radio communications and navigation systems. These ionospheric effects piqued the interest of scientists and amateur radio operators across the country. They conducted one of the largest citizen science experiments in space science, an international ham radio operating event specifically for studying the eclipse. Many of these scientists and hams will be gathering for the Ham Radio Science Citizen Investigation (HamSCI, http://hamsci.org) workshop.

The event will be held at the New Jersey Institute of Technology in Newark, NJ this Friday and Saturday (February 23-24, 2018) to share their observations and findings. The program begins each day at 9AM at the Campus Center.

Presentations by scientists and ham radio operators from the New Jersey Institute of Technology, the Johns Hopkins University Applied Physics Laboratory, NASA Marshall Space Flight Center, the Massachusetts Institute of Technology Haystack Observatory will highlight the program.

All interested are welcome to attend the workshop. For more information and registration, please visit http://hamsci.org/hamsci2018.

This HamSCI 2018 workshop is organized by Dr. Nathaniel Frissell and is hosted by the New Jersey Institute of Technology Center for Solar-Terrestrial Research.

Originally posted at:
http://tinyurl.com/ANS-056-Southgate-NJIT (Southgatearc.org)

[ANS thanks Southgate for the above information]

Volunteer Opportunity - Openings for News Service Rotating Editor

If you're open to volunteering to help AMSAT this is your chance! We have openings for a few volunteers willing to help as an AMSAT News Service editor.

Our editors work on a rotating schedule with each taking turns as the current week's news editor. Using input received from members, the amateur radio community, officers, plus our other editors your job is to assemble the AMSAT News Service bulletin for your week. (Template is provided to help you format the message.)

If you can help contact our Senior News Service Editor, Lee McLamb, KT4TZ via his e-mail: kt4tz(a)amsat.org

(Ed. note: the need for at least one, hopefully many volunteer editors, is immediate. K9JKM will be retiring at the end of March with extensive travel plans, often out of reach of the internet.)

[ANS thanks the AMSAT News Service for the above information]

Bittern DX Educational Outreach Project in the UK

AMSAT-UK shared a link from an article posted on England's North Norfolk news reporting on the success of Bittern DX's educational outreach project with the Girl Guides.

http://tinyurl.com/ANS-056-GirlGuides

Eight members of a north Norfolk-based amateur radio group have been teaching girl guides how to contact colleagues around the world as part of Thinking on The Air Day.

The team from Bittern DX's educational outreach project made the journey to the village hall in Saham Toney, near Swaffham, to speak to about 60 rainbows, brownies, guides and their adult leaders.

Thinking on the Air Day is an opportunity for the members of girlguiding from the youngest rainbow to the oldest trefoil guild member to talk to other members of the World Association of Girl Guides and Girl Scouts via amateur radio.

On this day each year members remember the founders of the movement and take part in various activities to think about their sisters throughout the world.

The girl guides were given the chance to find a transmitter 50 yards away, shown how the Morse code works, and they all keyed their name correctly, earning a certificate.

They were then allowed to talk on air to each other using handsets before being introduced to VHF working with each participant correctly conducting a meaningful conservation with a club member outside on a handheld.

One brownie had a short conversation with an amateur in Germany.

Next they were shown the principles and techniques behind satellite working with three conversations conducted.

Peter Stainton, publicity officer for the Bittern DX, said: "Club members found it very rewarding to see the young people take part in our hobby.

"One brownie said it had blown her mind away to see what we could do. But as a counterbalance, when being told how we could talk around the world and beyond, one commented 'I just use Skype'."

The group's outreach project is aimed at bringing an amateur radio experience to the general public and was given a boost last year with a grant of almost £10,000 from the National

Lottery's Awards for All fund for new club equipment.

The group also received money from the Radio Society of
Great Britain Legacy Fund (RSGB) to help buy a trailer
and new generator.

For more information visit www.bittern-dxers.org.uk/

[ANS thanks AMSAT-UK and North Norfolk News for the above information]

Microwave Compendium "Backscatter" available as free PDF

Backscatter is a compendium of the best technical articles that
have been in Scatterpoint, the UK Microwave Group newsletter (and
its predecessor) over the period 1999 to 2006

The original publication in 2008 was an A5 size book of 445 pages
and is an excellent reference with many articles on all aspects
of microwaves. Download from
http://www.microwavers.org/?backscatter.htm

Membership of UKuG is free to those under 21. Details of UKuG
membership can be found at: http://www.microwavers.org/

[ANS thanks Southgate ARC News for the above information]

Satellite Shorts From All Over

+ Bruce Paige, KK5DO, Director of AMSAT Awards congratulates Soren,
AK4WQ, for earning AMSAT Rover Award #012. See:
https://www.amsat.org/amsat-rover-award/

+ NASA TV plans coverage of the ISS Expedition 54 return to Earth:

Tuesday, Feb. 27, 2 p.m. EST: Expedition 54 crew farewell and
hatch closure. NASA astronauts Joe Acaba and Mark Vande Hei
and cosmonaut Alexander Misurkin of the Russian space agency
Roscosmos bid farewell to the International Space Station crew
and close the hatch of their Soyuz spacecraft in preparation
for undocking.

Tuesday, Feb. 27, 5:30 p.m. EST: Expedition 54 Soyuz undocking.

Tuesday, Feb. 27, 8 p.m. EST: Expedition 54 Soyuz deorbit burn
and landing in Kazakhstan. Landing is scheduled at 9:31 p.m EST.

+ At 5:02 p.m. EST, March 1, a two-hour launch window will open,
during which GOES-S will launch on a United Launch Alliance
Atlas V rocket from Space Launch Complex 41 at Cape Canaveral
Air Force Station (CCAFS) in Florida. Launch coverage will begin
at 4:30 p.m EST all on NASA TV.

+ Photos needed for 2018 edition of AMSAT Getting Started With
Amateur Satellites. Steve Belter, N9IP, recently tweeted that
the editors of the 2018 edition of "AMSAT Getting Started With
Amateur Satellites" are looking for action photos of people
in the act of operating the satellites. Submissions with credits
should be emailed to Steve n9ip at amsat dot org.

+ Satellite presentation in Surrey BC - The Surrey (BC) Amateur Radio

Club announces that there will be will be an amateur radio satellite presentation during their March 14, 2018 meeting. All are welcome to attend. The meeting will be held at the Emergency Management Center BC South West PREOC, 14292 Green Timbers Way, Surrey BC, at 7:00 PM. For more information visit their Web site at: http://ve7sar.net/index.html The City of Surrey has posted the news on their events page: https://www.surrey.ca/culture-recreation/26128.aspx [ANS thanks Surrey ARC for the above information]

+ A blog discussing frequently asked questions about visual and radio satellite tracking resources can be read at: http://tinyurl.com/ANS-056-SatTrackerFAQ

+ In order to understand many of the subtleties regarding launch vehicle design it is useful to understand many of the terms used in the engineering analysis and evaluation of these systems. Follow ths link to read about a few of the most important definitions.
http://www.spacedaily.com/reports/Launch_Vehicle_Lingo_999.html

+ Scott Tilley made headlines after finding a NASA satellite that had been lost for over a decade. The IMAGE satellite, which was meant to study the magnetosphere, was launched in 2000, and lost contact with Earth back in 2005. Tilley, who uses radio equipment to track objects whose orbits are undisclosed, rediscovered it on January 20. Ever since the first satellites were launched, amateur astronomers have played a vital role in keeping tabs on them. In fact, when the Soviet satellite Sputnik I took the United States by surprise in October of 1957, legions of practiced volunteers were ready to track it, armed only with enthusiasm, low-power telescopes, and a good sense of timing. These volunteers were part of Operation Moonwatch, a massive citizen science project. Find more at: http://tinyurl.com/ANS-056-MoonwatchHistory (www.atlasobscura.com)

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
k9jkm at amsat dot org